

LOUISIANA STATE UNIVERSITY IN NEW ORLEANS
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DIVISION OF BUSINESS AND
ECONOMIC RESEARCH

February 4, 1974

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

Attention: A&TS-PR-RS

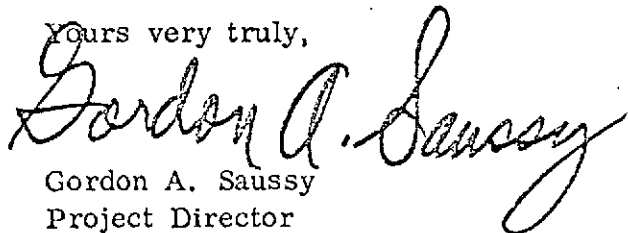
Dear Sirs:

Subject: CONTRACT NASA NAS8-28955

Enclosed is our final report on "Applications of Saturn/Apollo Automated Data System Capabilities to Problems and Environmental Impacts of Urban Transportation," under the above subject contract number.

We would appreciate hearing from you, at your convenience, concerning possible sources of funding to complete the work plan which is contained in this final report.

Yours very truly,



Gordon A. Saussy
Project Director

GAS:jsh
enclosure

NASA-CR-120216) APPLICATIONS OF
SATURN/APOLLO AUTOMATED DATA SYSTEM
CAPABILITIES TO PROBLEMS AND ENVIRONMENTAL
IMPACTS OF URBAN TRANSPORTATION (Louisiana
State Univ.) 7 p HC \$4.00 CSCL 13F

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FINAL REPORT DISTRIBUTION
CONTRACT NO. NASA NAS8-28955

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A&TS-MS-IP	2 copies
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TITLE PAGE

Contractor: Louisiana State University in New Orleans
Division of Business and Economic Research
Lakefront
New Orleans, LA 70122

Title of Contract: Applications of Saturn/Apollo Automated Data System
Capabilities to Problems of the Environmental Impacts
of Urban Transportation

Contract Period: June 6, 1972 - November 30, 1973

Reporting Period: October 6, 1973 - November 30, 1973

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This report was prepared by the Division of Business and Economic Research, Louisiana State University in New Orleans, under Contract No. NASA NAS8-28955, Applications of Saturn/Apollo Automated Data System Capabilities to Problems of the Environmental Impacts of Urban Transportation, for the George C. Marshall Space Flight Center of the National Aeronautics and Space Administration.

In the "Scope of Work" of our contract, we sketched the wealth of data demanded by the National Bureau of Economic Research's prototype model of a metropolitan area. We then committed ourselves as follows: "The Division of Business and Economic Research will gather and assess data according to the priorities set in consultation with the director of the NASA-George C. Marshall Space Flight Center urban information system demonstration experiment."

In monthly reports, we specified our task in the frame of reference of the following work plan:

A. FOR GROUND TRUTH:

- 1) 2 printouts of present tape.
1 copy of present tape.
- 2) Create 2 new tapes by stripping down the original.
- 3) Print out all establishments with mailing addresses different from physical location.
- 4) Correct zips so that all are for establishment location, sort by 3-digit SIC, and alphabetically by name.
- 5) Check against parish code, correct parish codes, decode employment codes (and identify these records).
- 6) Sort by

parish
SIC
alphabet

 and print.
- 7) Sum D&B parish totals by 3-digit SIC. Check with LDES.
- 8) Correct D&B employment or SIC figures as necessary.
- 9) Calculate areas of zip units, and compute employees/sq. area by SIC, and % of SIC employment by zip unit. Devise relevant zones, using these and other criteria.
- 10) Select about 12 representative zones for analysis as test sites.
- 11) For representative zones, analyze employment by establishment type (light industry; heavy industry; commercial and service; institutional).

B. FOR REMOTELY SENSED DATA (plus available zoning maps):

Identify land uses by sq. ft. of

work-space parking space

 for: light industry;
heavy industry; commercial and service; institutional.

C. CORRELATE REMOTELY SENSED DATA AND GROUND TRUTH:

For each identified employment type, first by zone then by zonal aggregates, then total; run these regressions:

$$\text{No. of Employees} = a_0 + a_1 \left[\begin{array}{c} \text{hundreds of sq. ft.} \\ \text{of work-space} \end{array} \right] + a_2 \left[\begin{array}{c} \text{hundreds of sq. ft.} \\ \text{of parking space} \end{array} \right]$$

$$\begin{array}{l} \text{For Industry} \\ \text{Institutions} \end{array} + a_3 \left[\begin{array}{c} \% \text{ of parking space filled} \\ \text{on mid-afternoon workday} \end{array} \right]$$

$$\text{For Commercial and Service} + a_3 \left[\begin{array}{c} \% \text{ of parking space filled} \\ \text{on mid-afternoon Saturday} \end{array} \right]$$

Test whether zones are significantly different from each other.

Due to the nature of this particular demonstration experiment, we can make two speciously conflicting statements: (1) We attained the goals set by the directors of the experiment, and (2) Our final report is a progress report.

We have spent literally thousands of hours developing ground-truth data on employment location by type. The lack of any single source for comprehensive and reliable data was obvious from the work done to correct and merge information from the Dun & Bradstreet Corporation, the Louisiana Department of Employment Security, South Central Bell Telephone Company, responses to letters and telephone calls, agencies responsible for government employees, and school directories. Even for knowing what was happening to employment in June of 1972, the building of this data system will not be accepted as complete for some months. Presently we are completing the government and school employment sectors; in the last week, we have become aware of other smaller sectors which are inadequately represented, such as religious organizations and entertainment theatres.

To reach the present stage of our work--Stage A.8, according to the above outline--we hurdled two major obstacles. The first was the number of changes, additions, and deletions to the D&B file--in all, our punched cards for these emendations exceeded 20,000. The following table details the work which has been done prior to the changes which we are currently in the process of making:

- 9.

	<u>Orleans</u>	<u>Jefferson</u>	<u>St. Tammany</u>	<u>St. Bernard</u>	<u>Plaquemine</u>	<u>St. Charles</u>	<u>Total</u>
Records on old tape	8,389	5,335	917	665	566	301	16,173
Records on new tape after corrections, additions, and deletions	11,782	6,589	1,140	692	663	313	21,179
Additions	5,077	2,780	470	277	287	176	9,067
Deletions	1,588	1,367	237	239	163	159	3,753
Changes	3,626	1,897	287	170	191	89	6,258
Employees old tape	168,983	74,558	5,905	6,968	6,408	5,244	268,066
Employees new tape	242,728	115,826	10,352	9,651	14,244	5,855	398,656

The second obstacle hurdled was that of access to a computer. Although the Slidell computer complex has all necessary hardware, difficulty of communicating and the turnaround time of almost a day per submission lengthened the processing tasks from days to months.

The DBER committed resources to this effort far beyond those for which we were compensated by our contractor. We did this with the conviction that it is impossible to objectively study the socio-economic dynamics of New Orleans without requisite data. The need for such data on employment location--and lack of it save for this single file--has been underlined by requests already for us to provide tabulations to:

- 1) The Office of the Mayor of New Orleans for planning in the CBD;
- 2) The Louisiana Department of Highways, through a consultant, for traffic planning and projecting; and
- 3) The Regional Planning Commission for the promotion of car-pooling in response to the energy crisis.

When resources permit, we shall attempt to update this data bank, using all available computerized records to do so.

We shall also attempt to use computerized mapping programs in order to delineate employment zones which are homogeneous within and heterogeneous from contiguous zones. For this purpose, work which we have undertaken using the Census DIME file and traffic zone designations should prove invaluable. To understand employment-location dynamics, we shall study the changes by traffic zone aggregates from 1960 to 1972--the 1960 data provided by a transportation study undertaken in that year.

That done, if funds are available, we would be in a position where we could undertake Tasks B and C of our work plan.

a. Contract value	\$ 5,000.00
b. Expenditures for this month	0.00
c. Expenditures to date	4,999.65
d. Estimated funds to completion	.35
e. Anticipated over/under run	None
f. Changes authorized but not finalized	None
g. Changes under consideration but not authorized	Expansion of scope of work

Accounting Department budget figures as of November 30, 1973.